JAMMING AND FLOW OF ROD-LIKE GRANULAR MATERIALS IN A HOPPER *S. Saraf, S. Franklin*, Dept. of Physics, Granular Materials Lab, Research Corporation, National Science Foundation, sns5235@rit.edu, svfsps@rit.edu*

Long thin rods form solid plugs that are many times more rigid than piles of ordinary sand, greatly affecting their ability to flow through small openings. We study how rod-shaped particles flow through, and jam in, hoppers. As the opening aperture becomes larger, the mean number of particles that exit the hopper before a jam occurs also increases. A fundamental question is whether this mean number of exiting particles diverges, implying an aperture so large that the flow would never stop. This question has already been explored using spherical particles, although no definitive answer has been found. Rods have two lengths scales - length and width - which greatly complicate the problem. The data collected measures the distribution of exiting particle mass in relation to the aspect ratio of the particles, the hopper aperture, and the pile thickness of the system. This research can lead to new understandings of granular material that would be significant to both the scientific and industrial communities. For example, this research is relevant in determining the ability of sickle cell blood cells to clot, or the jamming of nanotubes through a micropen.